

**Identity and taxonomic status of the Mexican garter snake  
*Thamnophis vicinus* Smith, 1942 (Reptilia: Serpentes: Natricidae)**

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*Abstract.*—The nominal garter snake species *Thamnophis vicinus* is shown to be a localized color pattern morph of the wide-ranging *T. cyrtopsis collaris*; this morph is known to occur only in three populations in the Mexican state of Michoacán.

*Thamnophis vicinus* was originally described (Smith 1942) from the vicinity of Morelia, Michoacán, on the basis of ten specimens differing from *T. cyrtopsis* only in lacking a vertebral stripe and in having large dorsal spots arranged in three rows rather than four. Bogert & Oliver (1945), Milstead (1953), Duellman (1961), and Webb (1966) concluded that *T. vicinus* is merely a color pattern morph of *T. cyrtopsis* (specifically of *T. cyrtopsis collaris* in the current taxonomy) and not a distinct species. However, Webb (1978) reexamined most of the type series of *T. vicinus*, and six additional specimens from other areas in Michoacán that combined pattern features of *T. vicinus* and *T. cyrtopsis collaris*. He concluded that the taxonomic status of *T. vicinus* is uncertain; for that reason, he tentatively resurrected *T. vicinus* as a separate species.

**Materials and Methods**

Preserved specimens were borrowed from the: American Museum of Natural History (AMNH); California Academy of Sciences (CAS); private collection of E. A. Liner (EAL); Field Museum of Natural History (FMNH); University of Kansas Museum of Natural History (KU); Los Angeles County Museum of Natural History (LACM); Louisiana State University Museum of Natural Science (LSUMZ); Muse-

um of Comparative Zoology, Harvard University (MCZ); Michigan State University Museum (MSU); Texas Cooperative Wildlife Collection, Texas A&M University (TCWC); Florida Museum of Natural History, University of Florida (UF); University of Illinois Museum of Natural History (UIMNH); University of Michigan Museum of Zoology (UMMZ); and Collection of Vertebrates, University of Texas at Arlington (UTA). Four standard characters (numbers of ventrals, subcaudals, and maxillary teeth; relative tail length) were recorded; the results are summarized in Table 1. Several aspects of color pattern also were noted and are detailed under Results and Discussion.

Specimens examined include: Colima, LSUMZ 7846; Durango, MSU 4434–36; Guanajuato, CAS 5848; Guerrero, LACM 130112; Hidalgo, MCZ 11432, UMMZ 99085; Jalisco, MSU 9801, 9803 (2 spec.); Michoacán, FMNH 37116–22, 39058–61, 100098 (holotype of *T. vicinus*), 126499–504, LACM 65252, MCZ 56019, 131014, UIMNH 23414, 23435, UMMZ 102510, 104699, 112537, 112541, 119409–12, 121546, UTA R-6050–52; Oaxaca, AMNH 97889, 103091, 103100, 107001, EAL 1797, LACM 130111–12, LSUMZ 7560, UF 11326–27; Querétaro, TCWC 53068; Sinaloa, CAS 24077, 24082, KU 40349, 78923, 83413, LACM 130113, MSU 567; Zacatecas, UMMZ 118433.

Table 1.—Variation in four meristic or mensural characters in *Thamophis cyrtopsis collaris* from Mexico. The Northern Sample includes specimens from northwestern Michoacán and from populations north of Michoacán; the "vicinus" Morph Sample includes specimens from populations in which any individuals exhibit a *T. vicinus* color pattern; and the Southern Sample includes specimens from Guerrero and Oaxaca. Ventral and subcaudal data are from Webb (pers. comm.) as well as specimens examined by the author. Values are given as mean ± standard deviation (range of variation) and sample size.

Character	Northern sample	"vicinus" morph sample	Southern sample
Ventrals	♂♂ 158.1 ± 3.65 (152–166) 34 ♀♀ 153.8 ± 3.59 (146–162) 50	159.9 ± 2.95 (155–165) 11 153.1 ± 3.94 (147–159) 16	152.8 ± 4.50 (149–158) 4 150.2 ± 3.17 (144–155) 19
Subcaudals	♂♂ 97.8 ± 6.50 (86–109) 27 ♀♀ 91.9 ± 5.93 (80–103) 28	87.7 ± 2.06 (84–90) 7 79.9 ± 3.73 (74–88) 10	89.7 ± 5.03 (85–95) 3 81.4 ± 2.56 (77–85) 14
Tail/Total Length (%)	♂♂ 28.3 ± 1.12 (26.4–29.6) 8 ♀♀ 27.7 ± 1.60 (25.1–30.4) 7	25.5 ± 0.68 (24.7–26.7) 8 24.7 ± 1.15 (22.7–27.0) 10	28.7 (28.7) 1 25.8 ± 0.83 (23.9–26.6) 9
Maxillary Teeth	♂♂ 26.7 ± 0.76 (26–28) 7 ♀♀ 25.7 ± 0.82 (25–27) 10	27.5 ± 1.73 (25–29) 4 26.5 ± 1.29 (25–28) 4	— 26.7 ± 0.76 (26–28) 7

Results and Discussion

I examined 30 specimens from throughout Michoacán that could be identified as either *T. vicinus* or *T. cyrtopsis collaris*. Partial or complete suppression of the vertebral light stripe, accompanied by enlargement and frequent fusion of two or more sets of dark dorsal spots or blotches on at least the anterior portion of the body, occurs in specimens from three separate areas in Michoacán: near Morelia, in the northeast; at Tancítaro, in the west-central region; and in the Sierra de Coalcomán, in the southwest (Fig. 1). The *T. vicinus* dorsal pattern is by no means uniform in these areas. Most specimens from the vicinity of Morelia are preservative-darkened, hence details of pattern are sometimes difficult to discern. No indication of a vertebral stripe is evident on six specimens (FMNH 126499–500, 126504; MCZ 56019; UIMNH 23435; UMMZ 102510), but there appears to be one present on UIMNH 23414, as well as traces of a fragmented, indistinct one on FMNH 100098 (which, ironically, is the holotype of *T. vicinus*). In all examples, the anteriormost postnuchal spots are enlarged and fused to form transverse blotches that extend from the venter to the vertebral row and interrupt the lateral stripes. For a varying distance thereafter, the lateral blotches alternate with the dorsolateral spots, the latter being fused transversely across the back to form a single, vertebral row of blotches. This pattern (Fig. 2) contrasts with that usually attributed to *T. cyrtopsis collaris*, in which the vertebral light stripe is distinct, both it and the lateral stripes are uninterrupted, there are no transverse bands on the neck, and the dorsolateral spots are not fused across the back (Fig. 2).

The vertebral stripe is present on all eight specimens from the Sierra de Coalcomán, although it is relatively faint in all but one (UMMZ 104699). Six specimens from the vicinity of Dos Aguas (UMMZ 119411–12, 121546; UTA R-6050–52) have the characteristic *T. vicinus* blotch pattern anteriorly

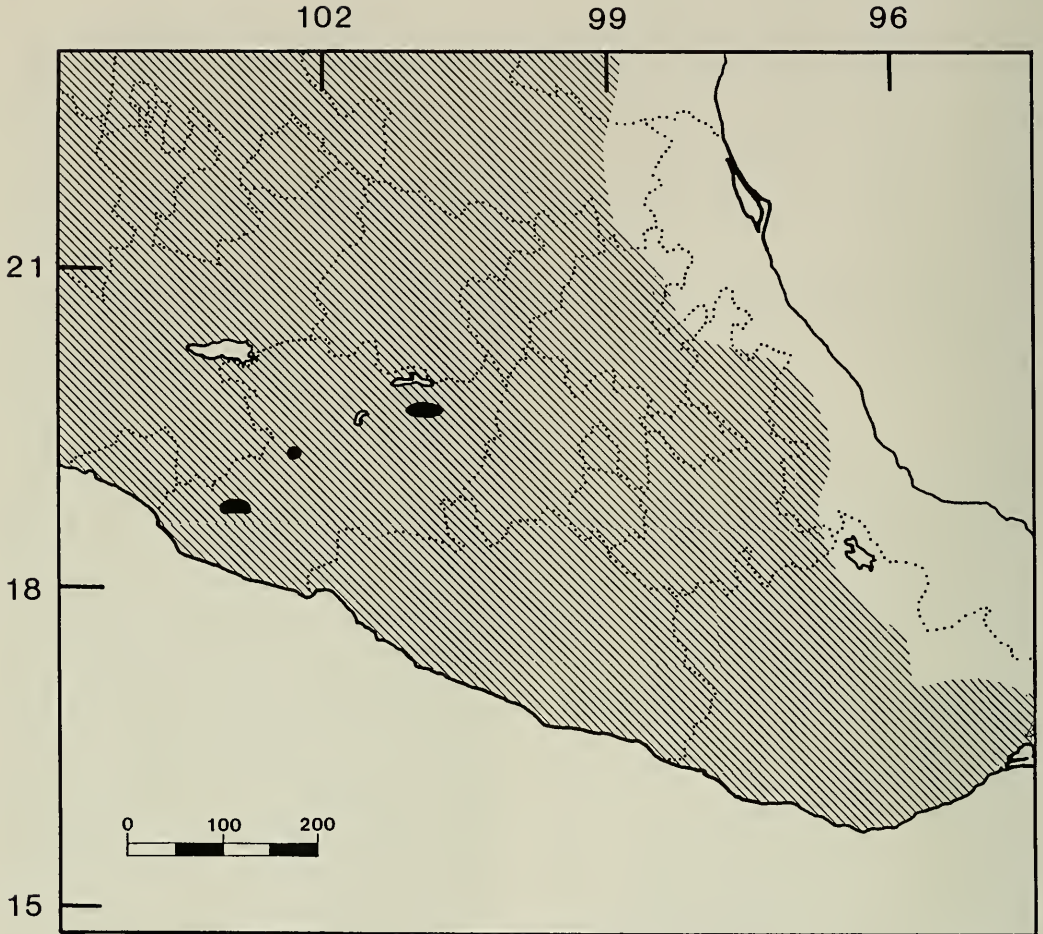


Fig. 1. Map of southwestern Mexico showing the range of *Thamnophis cyrtopsis* (diagonal lines) and the areas where animals having a dorsal pattern characteristic of the "vicinus" morph have been collected (black blotches).

(Fig. 3), whereas the two specimens (UMMZ 104699, 112537) from farther west (toward Coalcomán) have a *T. cyrtopsis collaris* blotch pattern on the neck (Fig. 3).

Finally, a series of 11 specimens (FMNH 37116–22, 39058–61) from Tancítaro, which lies about halfway between Morelia and the Sierra de Coalcomán, exhibit an array of dorsal patterns. All but one of the series (FMNH 37117) have a vertebral stripe, but it is faint in six of the specimens. In terms of the dorsal blotching, four specimens have a pattern more-or-less typical of *T. vicinus*, four are more characteristic of *T.*

*cyrtopsis collaris*, and three appear to be intermediate (Fig. 4).

None of the authors who have discussed *T. vicinus* has suggested that it differs from *T. cyrtopsis collaris* in any respect other than color pattern, although Webb (1978, Table 1) showed that specimens referred to the former have a lower mean number of subcaudals than the latter. The specimens I examined from within the "range" of *T. vicinus* do, indeed, have fewer subcaudals (and a proportionally shorter tail) than specimens of *T. cyrtopsis collaris* from northwestern Michoacán (LACM 65252; MCZ 131014; UMMZ 119409–10) and farther

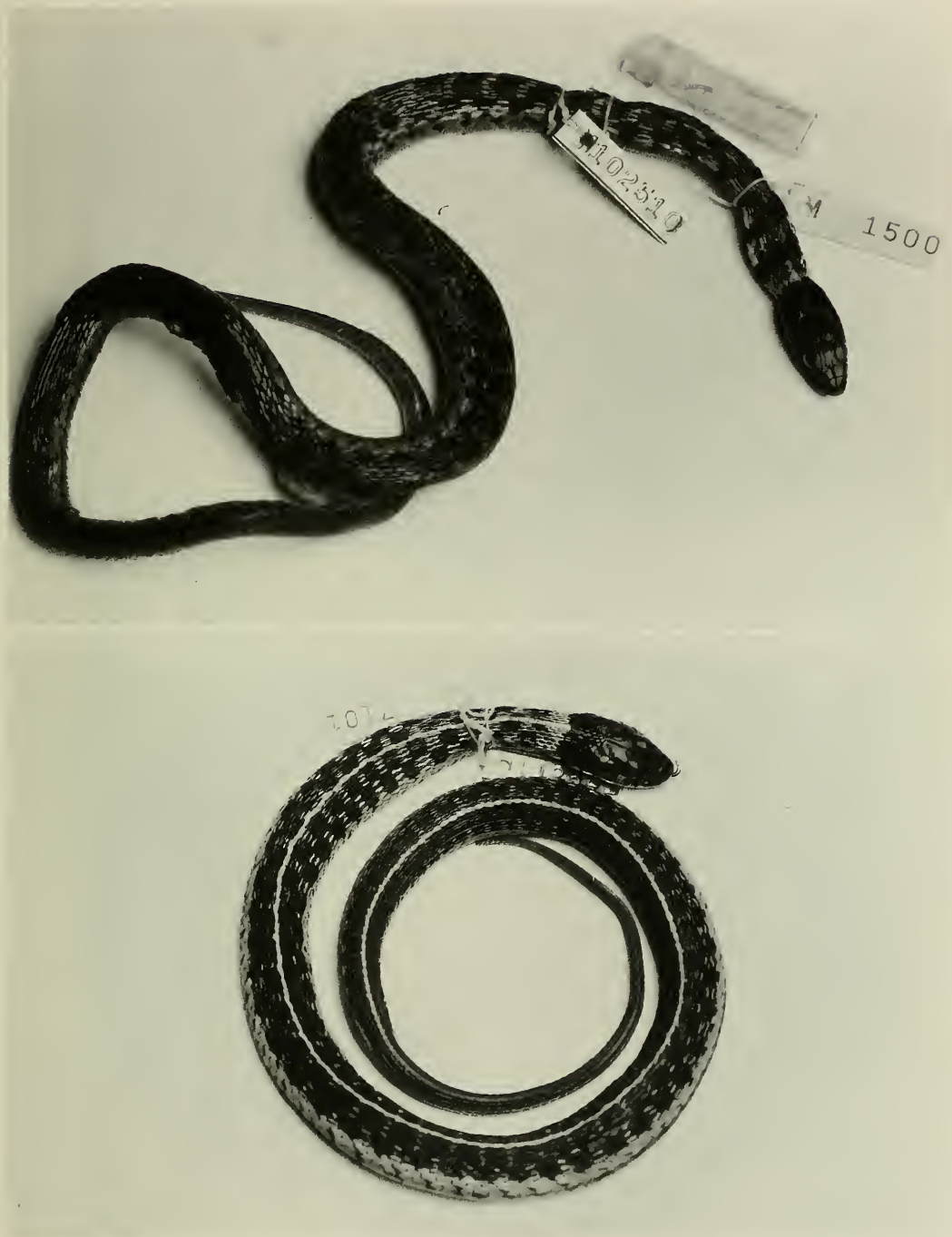


Fig. 2. Upper: Adult male *Thamnophis cyrtopsis collaris* (UMMZ 102510) from Pino Gordo (= 37 km by road W Ciudad Hidalgo), Michoacán, Mexico, showing a dorsal pattern characteristic of the "vicinus" morph. Lower: Subadult female *Thamnophis cyrtopsis collaris* (UMMZ 112541) from Uruapan Parque Nacional, Michoacán, Mexico, showing a dorsal pattern characteristic of the subspecies.



Fig. 3. Upper: Adult female *Thamnophis cyrtopsis collaris* (UMMZ 121546) from Dos Aguas, Michoacán, Mexico, showing a dorsal blotch pattern characteristic of the "vicinus" morph. Lower: Subadult male *Thamnophis cyrtopsis collaris* (UMMZ 104699) from the Cerro de los Havellos, near Coalcomán, Michoacán, Mexico, showing a dorsal pattern characteristic of the subspecies.

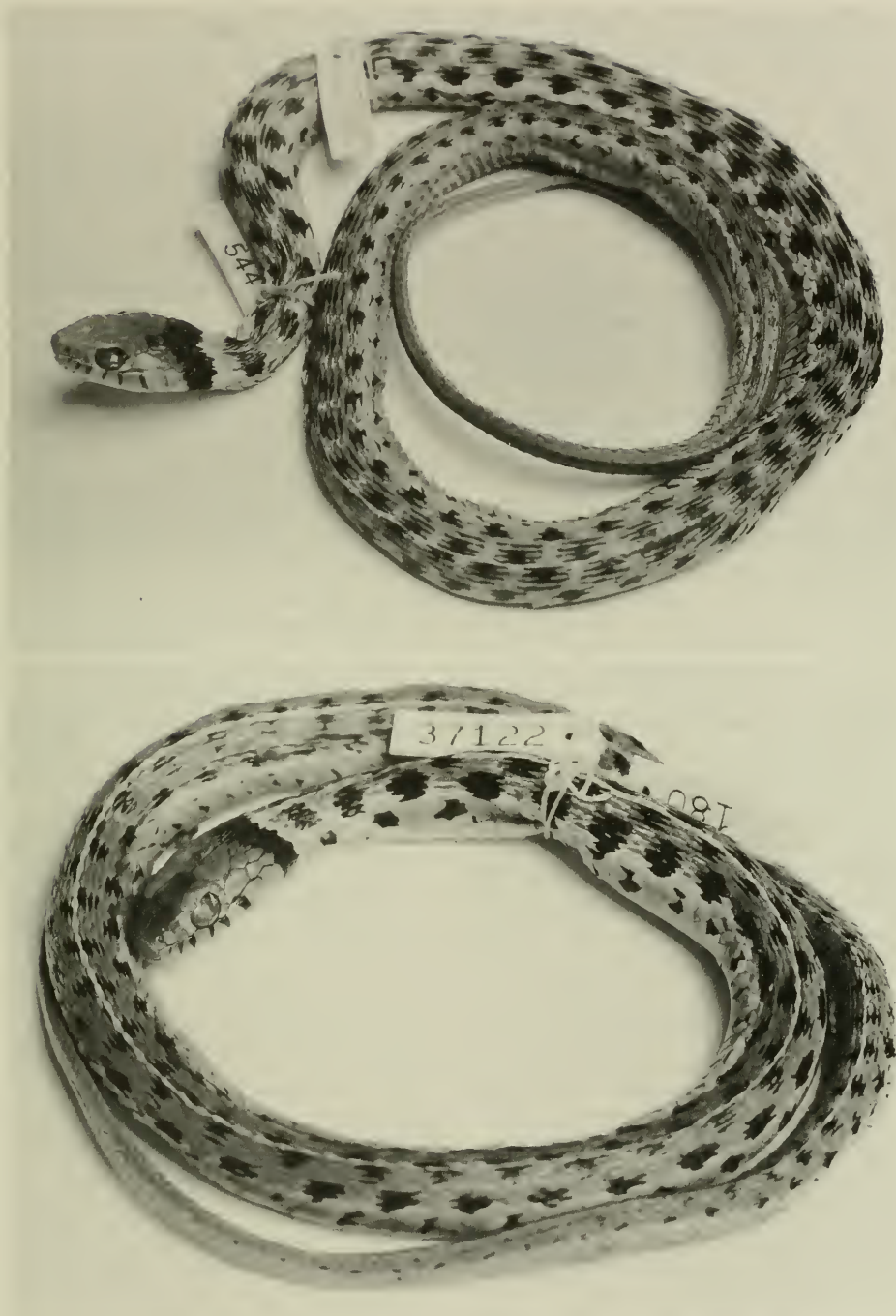


Fig. 4. Upper: Adult female *Thamnophis cyrtopsis collaris* (FMNH 39059) from Tancítaro, Michoacán, Mexico, showing a dorsal blotch pattern characteristic of the “vicinus” morph. Lower: Adult female *Thamnophis cyrtopsis collaris* (FMNH 37122) from Tancítaro, Michoacán, Mexico, showing a dorsal pattern characteristic of the subspecies.

north in the range of that subspecies, but the mean number of subcaudals is not significantly less than that of *T. cyrtopsis collaris* from Guerrero and Oaxaca to the south (Table 1). Interestingly, still farther south—in Chiapas and Guatemala—*T. cyrtopsis collaris* has subcaudal counts that approach those of the population north of Michoacán (Webb 1982).

Because *T. vicinus* does not differ mensurally or meristically from both geographically adjacent populations of *T. cyrtopsis collaris*, and differs only inconsistently in a few aspects of color pattern, it is apparent that *T. vicinus* represents nothing more than a variant pattern morph—and a junior synonym—of *T. cyrtopsis collaris*. Analogous situations are not uncommon in other species of *Thamnophis* (see Rossman et al. 1996).

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